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Report to the Federal Communications Commission on Carrier Efforts Toward Attaining Digital TTY Accessibility, and the Status of the Various Technological Solutions, as Provided by CC Docket No. 94-102, In the Matter of Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems

California RSA #3 Limited Partnership, A California Limited Partnership, d/b/a Golden State Cellular ("Golden State"), by its attorneys, pursuant to the Federal Communications Commission's ("Commission") *Fourth Report and Order* in CC Docket No. 94-102,¹ hereby files a Quarterly Report for the quarter ending June 30, 2002, detailing its efforts towards attaining digital text telephone ("TTY") accessibility, and the status of the various technological solutions that will help it attain that goal.

In the *Fourth Report and Order* the Commission established December 31, 2001 as the new deadline for carriers operating digital wireless systems to have obtained all software upgrades and equipment necessary to make their systems capable of transmitting 911 calls from TTY devices. It further established June 30, 2002 as the deadline for carriers to integrate, test and deploy the technology in their systems in conjunction with the public safety community. In order to be assured that the aforementioned deadlines will be met without complication, the Commission required digital wireless carriers to submit Quarterly Reports fifteen days after the end of each quarter.² Golden State now files this instant report with the Commission.

I. Carrier Background

Golden State provides analog and on October 5, 2001, deployed digital CMRS wireless service in the California 3 RSA.³ As detailed below, and as acknowledged by the Commission by its grant of Golden State's request for waiver of Commission Rule 20.18(c) until December 31, 2002; compliance with the Commission's June 30, 2002 deadline was impractical.⁴ By way of background, at the time of its CDMA deployment, the TTY compatibility-required upgrades were not yet available from Golden State's infrastructure provider, Nortel Networks ("Nortel"),

¹In the Matter of Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems, *Fourth Report and Order*, CC Docket No. 94-102, 15 FCC Rcd 25216, 65 Fed. Reg. 82293 (December 28, 2000), ("*Fourth Report and Order*").

²*Id.*

³Station KNKN240 (CMA338B).

⁴In the Matter of Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, *Order*, CC Docket No. 94-102, DA 02-1540 (rel. June 28, 2002). ("*Order*"). (Granting Golden State waiver of 47 C.F.R. 20.18(c) until December 31, 2002.)

and Golden State understood that base software load MTX10 would be required in order to implement digital TTY compatibility. Golden State learned shortly thereafter that a software “patch” was available that would allow a CDMA Nortel switch to meet the TTY compatibility requirements while still operating under base load MTX09. However, Golden State did not learn of the availability of the MTX09 patch in time to allow Nortel to implement the patch before December 31, 2001. Given the short time frame between the December 31, 2001 deadline for carriers to have obtained TTY-capable equipment and the full compliance deadline of June 30, 2002, Golden State reserved its funds for its direct purchase of the MTX10 upgrade and filed a request for waiver of the Commission’s December 31, 2001 deadline.⁵ Prior to June 30, 2002, Golden State did in fact replace its processor, upgrading the hardware on its switch to support Nortel’s TTY software feature, when that feature is expected to become available to Golden State later this year.⁶ However, Golden State was not able to secure the Nortel TTY software (or the requisite MTX10 base software load update)⁷ before June 30, 2002. While its initial waiver request was still pending, Golden State filed a request for waiver of the June 30, 2002 compliance deadline.⁸ As stated above, during the second quarter of 2002, the Commission granted Golden State’s request for waiver. Golden State has placed a purchase order with Nortel for Nortel’s MTX10 base load and feature-specific CDMA TTY compatibility software, however, as of this date, has not yet been given a date for installation of the MTX10 base-load or the TTY/911 feature software on Golden State’s switch. Nonetheless, Golden State is continuing to work with Nortel in an effort to achieve compliance of Commission Rule 20.18(c) by December 31, 2002.

II. Access to 911 Through TTY Devices

A. Development Activities

Golden State utilizes analog AMPS and CDMA digital equipment provided by Nortel for its wireless network infrastructure. As stated above, Golden State has been granted a waiver of the June 30, 2002 deadline for Commission Rule 20.18(c) until December 31, 2002, and is

⁵ See California RSA # 3 Limited Partnership, A California Limited Partnership, d/b/a Golden State Cellular Petition for Waiver of the Deadline Established in the *Fourth Report and Order*, CC Docket No. 94-102, FCC 00-436 (December 27, 2001).

⁶ Golden State contracted an independent hardware vendor for the purchase and installation of a used processor to enable it to run the MTX-10 software.

⁷ As set forth in Nortel’s documentation appended hereto as Exhibit A, the TTY compatible software can only be supported by MTX09 for a maximum period of thirty (30) days; hence the need still exists to proceed with the MTX10 upgrade prior to implementation of this feature.

⁸ California RSA No. 3 Limited Partnership, A California Limited Partnership, d/b/a Golden State Cellular Petition for Waiver of the June 30, 2002 Deadline Regarding TTY Access To Digital Wireless Systems, CC Docket No. 94-102, FCC 00-436 (June 10, 2002).

working with Nortel to achieve compliance of the Commission's rule by that date. During the second quarter of 2002, Golden State requested that Nortel confirm the TTY 911 functionality of its equipment. Nortel's response is appended hereto as **Exhibit A**. Golden State is not independently capable of verifying the information presented below, but has no reason to believe that it is not accurate, particularly since the digital TTY compatibility requirement is a function of compatible network hardware and software and handsets. If a particular configuration works in one deployment for a particular vendor's infrastructure, it should work equally well in any other deployment. Therefore, as long as Nortel installs and enables TTY software on the Golden State network of the same type and standard as the TTY feature that Nortel tested and approved on other carriers' switches, Golden State is confident that, barring any technical difficulties, Nortel's installation of its TTY feature for CDMA cellular infrastructure on the Golden State switch will bring Golden State into compliance with Commission Rule 20.18(c).

While Golden State provides service to a number of brands of certified handsets owned by its subscribers and roamers entering its market, Golden State's primary handset providers for subscriber equipment sold by Golden State are Nokia and Motorola, Inc. ("Motorola"). As of this date, Golden State has not had access to any TTY-compatible CDMA handsets to enable it to commence testing. Nevertheless, Golden State has requested that Nokia and Motorola provide information on their progress in releasing commercially available TTY-compatible CDMA handsets. Motorola's response is appended hereto as **Exhibit B**. Golden State is not independently capable of verifying the information presented therein, but has no reason to believe it is not accurate. Golden State has not yet received a response from Nokia, and therefore cannot report on its development activities. In the past, however, Nokia provided this information directly to the Commission in its own quarterly report. Golden State presumes that Nokia will follow the same procedure for this quarter.

The appended information from Nortel and Motorola is respectfully submitted in response to these issues, as required in the Commission's *Fourth Report and Order* (rel. Dec 14, 2000).

- (1) *Network Infrastructure Software Development*
- (2) *Handset Development and Testing Plans*
- (3) *Beta Testing and Lab Testing*
- (4) *Release and General Availability to Carriers of Network Infrastructure Software*
- (5) *Availability to Carriers of Full Acceptance Test Units*
- (6) *Efforts Toward Achieving Digital Wireless Solution Compatibility With Enhanced TTY Devices*

B. Testing and Deployment Activities

As set forth in the appended Nortel update, Nortel urges its CDMA customers to engage their handset vendor(s) to test their commercial grade CDMA TTY capable handsets in the Nortel labs. Golden State has not been able to obtain a TTY-compliant handset. Golden State will contact its handset vendors with the particular request of providing handsets to Nortel for testing. Once the necessary MTX10 base load and TTY compliant software are installed on the

Golden State switch, and once Golden State is able to obtain commercially available TTY-capable CDMA handsets, it will proceed with respect to items 7 and 8 below.

Golden State communicated with the California State Highway Patrol, the designated Public Safety Answering Point ("PSAP") for all wireless carriers in California, to make the PSAP aware that the TTY Forum (through ATIS) offers a diagnostic test to determine if the PSAP's equipment is digital TTY-compatible.⁹ In the meanwhile, Golden State is not responsible for, nor does it exercise any control over, the public safety community obtaining digital TTY-compatible equipment. With regard to item 9, Motorola's response is set forth in **Exhibit B**. In response to item 10, the information set forth herein would be applicable to all portions of the Golden State network where CDMA digital has been deployed.

- (7) *Carrier Coordination of Testing With PSAP*
- (8) *Carrier Testing Activities, Including Field Testing, Consumer End-to-end Testing, and Other Necessary Tests*
- (9) *Retail Availability of Necessary Consumer Equipment*
- (10) *Geographic Scope of Network Infrastructure Deployment*

III. Conclusion

Golden State has been granted a waiver of the Commission's June 30, 2002 deadline for compliance with 47 C.F.R. 20.18(c), until December 31, 2002. Golden State has upgraded its processor to and is in the process of working with Nortel to deploy the Nortel MTX10 software and TTY-compatibility CDMA feature software to make its systems capable of transmitting 911 calls from TTY devices by December 31, 2002. As required, under the Commission's recent *Order*, Golden State will continue to provide the Commission with quarterly updates on the status of development and deployment. Based on the fact that Nortel has tested and approved software of the same type and standard that will be installed on Golden State's switch, Golden State expects that when Nortel installs the requisite software on the Golden State switch, Golden State's digital network will be fully compatible with TTY-compatible CDMA handsets. Golden State has placed a purchase order for the requisite software with Nortel. Nortel has not yet provided Golden State with a commitment as to a date for installation of the requisite Nortel software. Therefore, if Nortel is not be able to complete the install of the Golden State software load in sufficient time to enable Golden State's digital network to become TTY compliant by December 31, 2002, Golden State will seek a waiver of the December 31, 2002 deadline for full compliance with Commission Rule 20.18(c).

⁹ The diagnostic test can be found on the Alliance for Telecommunications Industry Solutions ("ATIS") webpage, www.atis.org, at TWIP (TTY Wireless Inter-Operability with PSAP TTY) Test, last checked on July 8, 2002.

Respectfully Submitted,

California RSA #3 Limited Partnership, A
California Limited Partnership,
d/b/a Golden State Cellular

Dated: July 15, 2002

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EXHIBIT A

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CDMA TTY/TDD Regulatory FAQ/RFI

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Enclosed is information regarding Nortel Networks status to deliver TTY solutions to market in support of CDMA service providers' ability to meet FCC TTY milestone objectives.

- What is the status of TTY/TDD network infrastructure **software/hardware development and testing?**

Nortel Networks response: Regarding the MTX10/NBSS10.x release, Nortel Networks has completed development, product test and verification. Nortel Networks has completed internal testing using prototype and more recently using commercial mobile handsets with TTY capabilities from a few vendors, which have all shown positive results. Nortel Networks does not anticipate performance issues with any other vendor's handsets once they become available provided they are based on published standards. Nortel Networks has also performed tests with a leading manufacturer of TTY/TDD (Teletypewriter /Terminal for Deaf Device) PSAP (Public Service Answering Point) equipment to ensure interoperability. Results of that specific testing were found to be positive*. This completed TTY/TDD solution is based on standards: IS-127-2 (EVRC) & IS 733-1 (13K Vocoder). Operators will be able to deploy the Nortel Networks TTY solution based on these original standards IS-733-1, IS127-2 to meet the FCC deadline for implementation.

New revisions of these standards namely IS-127-3 (EVRC TTY) & IS-733-2 (13K TTY) have been published as of September 2001. Nortel Networks plans to support this new addendum to the standards in our next scheduled software release, MTX11/NBSS11, which is scheduled to be generally available (GA) Q4 2002. Product testing for this newer, more robust TTY/TDD software based on the revised CDMA standards is currently underway. The latest test results have shown, under a variety of test conditions, that the TCER (Total Character Error Rate) is less than a percent. These positive results have been repeatable when interoperating with mobile terminals with TTY capabilities from a variety of different vendors who could make their test phones available to Nortel Networks during the testing of this TTY enhancement. Nortel Networks did conclude during interoperability that a few mobile terminals were attributing to a higher than usual TCER due to TTY algorithms internal to those handsets being less than the most current version at the time of testing. These vendors have taken steps to update their mobiles to the latest code; therefore Nortel Networks foresees no issues with interoperability with those mobile terminals in the future.

- For TTY/TDD what are the plans to work with any wireless carrier to perform **end-to-end customer tests**, and when will this occur?

Nortel Networks response: The verification process for MTX10/NBSS 10.1.2 version of the TTY/TDD functionality with Nortel Networks lead customers was completed as of January 2002. The Nortel Networks TTY/TDD solution showed TCER of less than 1% in most cases and marginally exceeded 1% TCER in only the most strenuous RF and TTY/TDD test conditions*. Nortel Networks used several different TTY mobile terminals during these test activities. Please note the 1% TCER is not part of the FCC mandate.

A more robust version of the TTY/TDD functionality based on the revised CDMA standards is to be delivered within the MTX11/NBSS11.0 software release, which begins end-to-end lead customer validation testing later this summer.

Operators are encouraged to request their handset vendors to test their commercial-grade CDMA TTY capable handsets in Nortel Networks Wireless Interoperability Test Lab.

***Nortel Networks acknowledges that the positive results of the TTY/TDD software feature is a direct function of the TTY/TDD equipment available to Nortel Networks and their lead customer verification partners at the time of TTY/TDD development, testing, and full network verification. Also note that some of the commercially deployed PSAP**

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equipment, consumer TTY/TDD devices, and TTY/TDD capable digital mobile terminals will not comply with the same published standards from which Nortel Networks TTY/TDD solution was developed and tested. This reality will impact wireless operators who strive to deliver the best quality solution. Some operator effort will be required to procure the proper permutation of TTY/TDD equipment to inter-work with Nortel Networks TTY/TDD infrastructure software.

- What is the Network infrastructure software/hardware **planned general availability dates** that support the deployment of this regulatory feature?

Nortel response: In order that wireless network operators may comply with the FCC's June 30, 2002 requirement for TTY/TDD implementation, Nortel Networks has made TTY/TDD enabling software available as follows:

Software load	CDMA SW general availability
MTX10/ NBSS10.x	Now Available (January 2002)

- What are the **hardware baseline and software baseline** to support CDMA TTY/TDD functionality?

Nortel Networks response:

Regulatory solution required	CDMA HW/SW baseline
TTY/TDD	NBSS10.x SW (BSS)** TTY capable handsets (3 rd party)

****Note:** NBSS10.x will operate with MTX09 software, however this configuration will only be supported for 30 days. NBSS software is only fully supported on the previous MTX software version as a step to upgrading to the most current MTX version. I.E. All customers require MTX10 software to not only maintain a supported NBSS10.x load, but to also enable the regulatory feature set contained in MTX10 e.g. CALEA, LNP, E911 phase 2.

Please also note that the MSC itself must meet certain hardware requirements in order to upgrade to the MTX10 version of software e.g. processor speeds, memory size. These requirements were communicated to customers in the year 2000. Nortel Networks customer account team personnel churn related to Nortel Networks 2001 downsizing activities impacted some smaller customers. In these instances communication did not occur until Q2 2001.

- What is the **schedule for deployment** of the software/hardware in the network?

Nortel Networks response: The minimum baseline software requirements for this functionality are given above. For questions related to scheduling its deployment into an operator's network, please contact Nortel Networks Product Deployment. The majority of Nortel Networks U.S. CDMA customers (>75%) has already upgraded to MTX10/NBSS10.x software and is therefore TTY/TDD ready. Most of the *remaining* CDMA customers are currently showing plans for MTX10/NBSS10 upgrade after June 30, 2002. Many of these smaller customers that have yet to upgrade have significant hardware prerequisites to procure prior to being able to upgrade their MTX and BSC baseline software version. Many of these same operators have scheduled MTX10/NBSS10.x release for later this year, which is when these mitigating baseline issues delaying switch readiness are closed. There are a relatively small number of rural cellular customers that from whom Nortel Networks has not received confirmation of their upgrade plans.

Nortel Networks recommends that all customers who have not yet ordered and scheduled upgrade MTX10/NBSS10.x to please contact Nortel Networks to ensure the most expeditious network upgrade.

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- What are Nortel Networks **plans to test their own or other vendor handsets** with your switch solution?

Nortel Networks response: Nortel Networks provides only infrastructure for wireless networks. Nortel Networks does not provide mobile handsets. Nortel Networks recommends that the operator engage its handset vendor(s) in order to respond to the FCC regarding handset availability and interoperability test results with Nortel Networks infrastructure.

Operators are encouraged to request their handset vendors to test their commercial grade CDMA TTY capable handsets in Nortel Networks Wireless Interoperability Test Lab.

Please contact Cher Bruce for scheduling TTY testing in the Nortel Networks Wireless Interoperability Test Lab, where testing is based on current published standards (Phone: 972-684-2299; Fax: 972-684-3881; csbruce@nortelnetworks.com)

- **Contacts:**

Product Marketing	MTX10/NBSS10.xSW	Kurt Raaflaub	(972) 685-2971
Product Management	CDMA TTY/TTD	Maniam P	(972) 685-2971
Regulatory	E911 Ph2&TTY/TDD	Charles Spann	(903) 852-6798
Product Deployment	CDMA NBSS SW	Mark Schwarzer	(972) 685-5851

EXHIBIT B

MOTOROLA
TTY COMPATIBILITY DEVELOPMENT STATUS REPORT
2nd Quarter 2002

Product	Standard	Status	Milestones	Progress
CDMA Handset	IS 127-3 IS 733-2	Carrier deployment	IOT: June 2001 UI: October 2001 ROM: December 2001 SA: May 2002	Handset development work complete. V60i and V120c CDMA phones have been approved for shipment.
GSM Handset	TS 26.226 TS 26.230 TR 26.231	Carrier deployment	UI: October 2001 IOT: October 2001 ROM: January 2002 SA: July 2002	Handset development work complete. V60i GSM phone has been approved for shipment. P280i expected to be approved for shipment in July
iDEN Handset		Carrier deployment	Production handsets available to carriers.	Handset work complete.
TDMA Handset	IS 823-A IS 840-A	Carrier deployment	IOT: September 2001 UI: September 2001 ROM: October 2001 SA: April 2002	Handset development work complete. V60i and V120t TDMA phone has been approved for shipment.
CDMA Infrastructure	IS 127-3 IS 733-2	Carrier deployment	FOA Jan 02 Software release available	Carrier testing complete.
iDEN Infrastructure		Carrier deployment	Production software available to carriers	Infrastructure software available for carrier deployment.

Note: Motorola works with its carrier customers to provide them specific information related to their respective products.

Note: IOT is Inter Op Testing with RAM based parts for Character Error Rate testing
UI is User Interface testing with HCO / VCO support
ROM is the availability of ROM based phones. These should be functionally identical to a RAM phone.
SA is Ship Acceptance of production volume quantities

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CERTIFICATE OF SERVICE

I, LaWanda Y. Tyson, a secretary with the law firm of Kurtis & Associates, P.C., do hereby certify that I have this 15th day of July 2002, filed the foregoing “REPORT TO THE FEDERAL COMMUNICATIONS COMMISSION ON CARRIER EFFORTS TOWARD ATTAINING DIGITAL TTY ACCESSIBILITY, AND THE STATUS OF THE VARIOUS TECHNOLOGICAL SOLUTIONS, AS PROVIDED BY CC DOCKET NO. 94-102, IN THE MATTER OF REVISION OF THE COMMISSION’S RULES TO ENSURE COMPATIBILITY WITH ENHANCED 911 EMERGENCY CALLING SYSTEMS” electronically with the Federal Communications Commission’s Electronic Comment Filing System. I have also filed a copy of this report with the Federal Communications Commission’s copy contractor, Qualex International. In addition, a copy of this report has been provided to Melinda Littell of the Commission’s Wireless Telecommunications Bureau.

/S/ LaWanda Y. Tyson
LaWanda Y. Tyson